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Building & Highway Material Testing Laboratory

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.12/KRIDL/BM(QB)/2012-13 11.03.2013

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Executive** Engineer, Dasarahalli Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West)**, KRIDL, Bangalore.
NAME OF THE WORK	:	Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/237/2012-13 Dated: 28.11.2012
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	11.03.2013

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	82	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	44	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	296	Min. 220

Note:

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/AIV/2012-13 11.03.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/237/2012-13 Dated: 28.11.2012
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	11.03.2013

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	376	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	293	291	
4	Aggregate Impact value = percent fines	21.87	22.61	
	100* (W_2/W_1)%			22.24

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Shape.T/2012-13 : 11.03.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: EE/DD/WO/237/2012-13 Dated: 28.11.2012
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 11.03.2013

Flakiness Index = **12.96%**

Elongation Index = **13.55%**

Result : Combined Flakiness & Elongation index : **26.51%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Stripping/2012-13 13.03.2013

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/237/2012-13 Dated: 28.11.2012
Type of Mix	Bituminous Macadam
Date of Testing	13.03.2013

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.20	96.80
2	3.2		
3	3.3		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Sp_Wa/2012-13 13.03.2013

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/237/2012-13 Dated: 28.11.2012
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	13.03.2013

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2024	2026	2025	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1274	1276	1275	
4	Weight of saturated surface dry aggregate in air	W_3 g	2030	2025	2010	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	756	749	735	
6	Weight of oven dried aggregate	W_4 g	1999	2015	2010	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.644	2.690	2.735	2.689
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.757	2.727	2.735	2.746
9	Water Absorption	$((W_3-W_4)*100)/W_4$	1.55%	0.50%	0.00%	0.78%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Agg.G/2012-13 13.03.2013

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	Improvement roads from Mallasandra Main Road to Railway Gate Palya in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/237/2012-13 Dated: 28.11.2012
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	13.03.2013

Total Weight of Sample: **5200** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	362	6.96	6.96	93.04	90-100	
13.2	1685	32.40	39.37	60.63	56-88	
4.75	1488	28.62	67.98	32.02	16-36	
2.36	969	18.63	86.62	13.38	4-19	
0.3	386	7.42	94.04	5.96	2-10	
0.075	142	2.73	96.77	3.23	0-8	

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	296	5.58	5.58	94.42	90-100	
13.2	1783	33.64	39.23	60.77	56-88	
4.75	1525	28.77	68.00	32.00	16-36	
2.36	895	16.89	84.89	15.11	4-19	
0.3	412	7.77	92.66	7.34	2-10	
0.075	153	2.89	95.55	4.45	0-8	

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